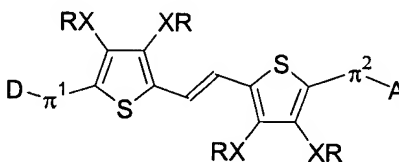


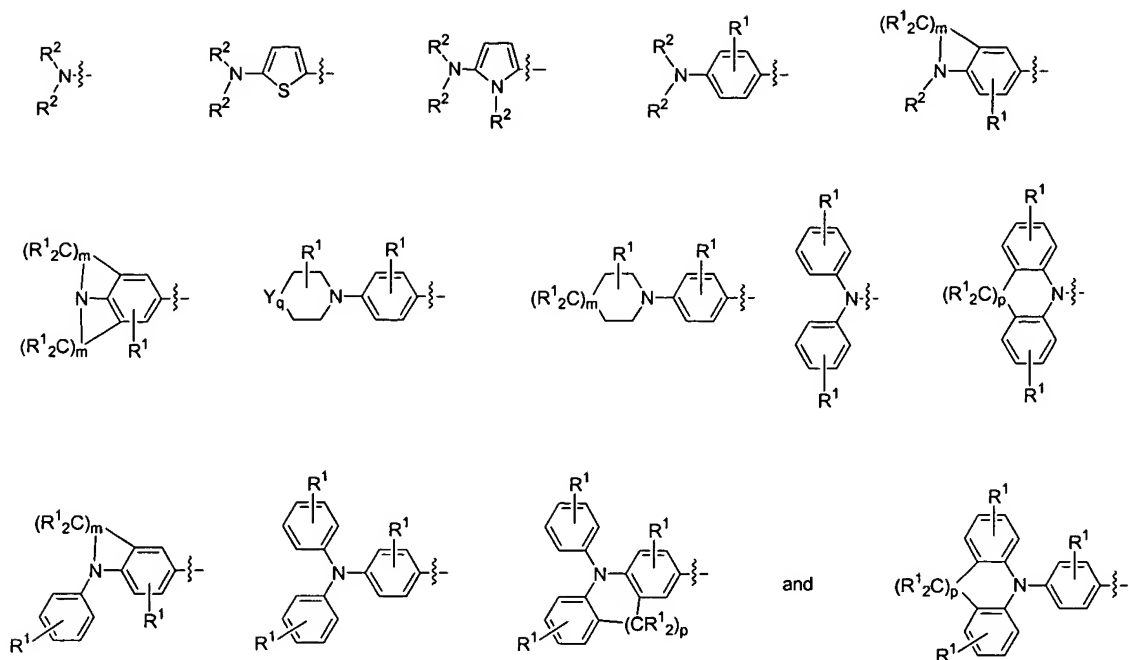
What is claimed is:

1. A composition comprising a linear polymer, the linear polymer comprising pendant chromophores having the formula D- $\pi$ -A, wherein  $\pi$  is a  $\pi$  bridge including a thiophene ring having oxygen atoms bonded directly to the 3 and 4 positions of the thiophene ring, D is a donor, and A is an acceptor.
2. The composition of Claim 1, wherein the oxygen atoms are independently substituted with an alkyl, heteroalkyl, aryl, or heteroaryl group.
3. A composition comprising a linear polymer, the linear polymer comprising pendant chromophores having the formula:

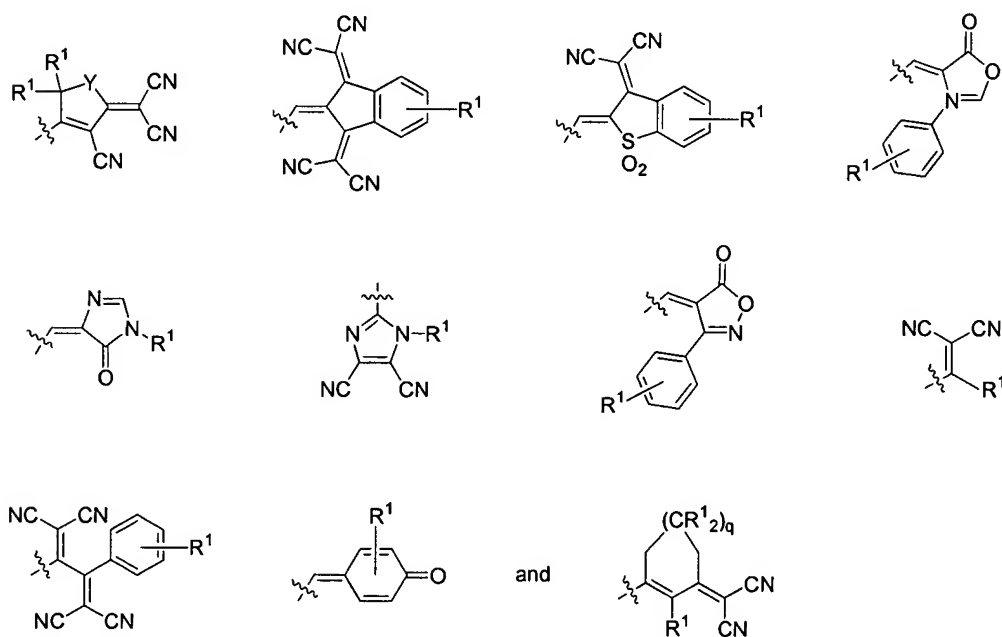


wherein, independently at each occurrence:  $\pi^1$  is absent or a  $\pi$ -bridge;  $\pi^2$  is absent or a  $\pi$ -bridge; D is an donor; A is an acceptor; X is O or S; and R is an alkyl, aryl, heteroalkyl, or heteroaryl group.

4. The composition of Claim 3 wherein the donor is selected from the group consisting of:



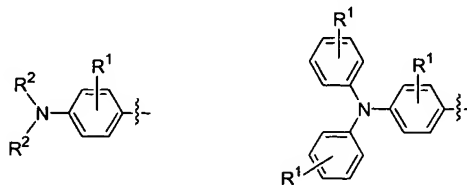
and the acceptor is selected from the group consisting of



wherein independently at each occurrence: R<sup>1</sup> is hydrogen, a halogen except when bonded to a carbon alpha to or directly to a nitrogen, oxygen, or sulfur atom, or an alkyl,

aryl, heteroalkyl, or heteroaryl group;  $R^2$  is hydrogen or an alkyl, aryl, heteroalkyl, or heteroaryl group; Y is O, S or Se; m is 2, 3 or 4; p is 0, 1 or 2; and q is 0 or 1.

5. The composition of Claim 4, wherein the donor is selected from the group consisting of



wherein, independently at each occurrence:  $R^1$  is hydrogen, a halogen except when bonded to a carbon alpha to or directly to a nitrogen, oxygen, or sulfur atom, or an alkyl, aryl, heteroalkyl, or heteroaryl group; and  $R^2$  is hydrogen or an alkyl, aryl, heteroalkyl, or heteroaryl group.

6. The composition of Claim 3, wherein each X is oxygen and each R group is an alkyl group.

7. The composition of Claim 3, wherein the polymer further comprises pendant crosslinkable groups.

8. The composition of Claim 7, wherein the chromophore further comprises at least one crosslinkable group.

9. An electro-optic device, comprising the composition of Claim 1.

10. The electro-optic device of Claim 9, wherein the electro-optic device is selected from the group consisting of an optical modulator, an optical switch, and an optical directional coupler.

11. The electro-optic device of Claim 9, comprising: 1) an input waveguide; 2) an output waveguide; 3) a first leg having a first end and a second end, the first leg being coupled to the input waveguide at the first end and to the output waveguide at the second end; and 4) a second leg having a first end and a second end, the second leg being coupled to the input waveguide at the first end and to the output waveguide at the second end.

- 1 12. The electro-optic device of Claim 9, comprising: 1) an input; 2) an output; 3) a first  
2 waveguide extending between the input and output; and 4) a second waveguide aligned to the  
3 first waveguide and positioned for evanescent coupling to the first waveguide.
- 1 13. An optical router including the electro-optic device of Claim 9.
- 1 14. A communications system including at least one electro-optic device of Claim 9.
- 1 15. A method of data transmission comprising transmitting light through the composition of  
2 Claim 1.
- 1 16. A method of telecommunication comprising transmitting light through the composition of  
2 Claim 1.
- 1 17. A method of transmitting light comprising directing light through or via the composition of  
2 Claim 1.
- 1 18. A method of routing light through an optical system comprising transmitting light through or  
2 via the composition of Claim 1.
- 1 19. A phased array radar system comprising the composition of Claim 1.